

اصل حای نه نوشتن باریت مناسبه شود!

الف)
$$\frac{x^3 + 3x^2 - 11x + 3}{x^2 + 5x - 3} \quad x \neq 1, x \neq -3$$

$$y = \frac{x+3}{x^2 + 3x^2 - 11x + 3} = \frac{x+3}{5x^2 - 11x + 3}$$

$$(x-1)(5x-6) = 5x^2 - 11x + 6$$

$$(x-1)(5x-6) - (5x^2 - 11x + 3) = 5x^2 - 5x + 6 - 5x^2 + 11x - 3 = 6x + 3$$

$$(x-1)(5x-6) = 5x^2 - 11x + 6$$

$$(x-1)(5x-6) - (5x^2 - 11x + 3) = 6x + 3$$

$$D_f = \mathbb{R} - \left\{1, -3, -\frac{1}{5}\right\}$$

$$y = \frac{x+3}{x^2 + 3x^2 - 11x + 3} = \frac{x+3}{5x^2 - 11x + 3}$$

$$(x+3)(5x-6) = 5x^2 - 11x + 18$$

$$(x+3)(5x-6) - (5x^2 - 11x + 3) = 5x^2 + 15x - 18 - 5x^2 + 11x - 3 = 26x - 21$$

$$(x+3)(5x-6) = 5x^2 - 11x + 18$$

$$(x+3)(5x-6) - (5x^2 - 11x + 3) = 26x - 21$$

ب)
$$y = \frac{x+3}{x^3 - 2x^2 + 2x - 1}$$

$$(x-1)(x^2 - x + 1) = x^3 - 2x^2 + 2x - 1$$

$$(x-1)(x^2 - x + 1) - (x^3 - 2x^2 + 2x - 1) = x^3 - x^2 + x - 1 - x^3 + 2x^2 - 2x + 1 = x^2 - x$$

$$(x-1)(x^2 - x + 1) = x^3 - 2x^2 + 2x - 1$$

$$(x-1)(x^2 - x + 1) - (x^3 - 2x^2 + 2x - 1) = x^2 - x$$

$$D_f = \mathbb{R} - \{1\}$$

$$y = \frac{x+3}{x^3 - 2x^2 + 2x - 1}$$

$$(x-1)(x^2 - x + 1) = x^3 - 2x^2 + 2x - 1$$

$$(x-1)(x^2 - x + 1) - (x^3 - 2x^2 + 2x - 1) = x^2 - x$$

$$(x-1)(x^2 - x + 1) = x^3 - 2x^2 + 2x - 1$$

$$(x-1)(x^2 - x + 1) - (x^3 - 2x^2 + 2x - 1) = x^2 - x$$

$$y = \frac{2}{x^2 - 5|x-1| - 2x + 5}$$

$$x^2 - 5|x-1| - 2x + 5 \neq 0$$

$$x^2 - 5(x-1) - 2x + 5 \neq 0$$

$$x^2 - 7x + 10 \neq 0$$

$$(x-2)(x-5) \neq 0$$

$$x \neq 2, x \neq 5$$

$$D_f = \mathbb{R} - \{2, 5\}$$

الف)
$$y = \sqrt{[-x]-2}$$

$$[-x]-2 \geq 0$$

$$-x \geq 2$$

$$x \leq -2$$

$$D_f = (-\infty, -2]$$

ب)
$$y = \frac{5x^2 + 4}{[x]^2 - 2[x] - 3}$$

$$[x]^2 - 2[x] - 3 \neq 0$$

$$([x]-3)([x]+1) \neq 0$$

$$[x] \neq 3, [x] \neq -1$$

$$D_f = \mathbb{R} - \{[x] \in \mathbb{Z} \mid [x] = 3, -1\}$$

الف)
$$y = \sqrt{\left[x - \frac{1}{n}\right] + \left[x + \frac{1}{n}\right]}$$

$$\left[x - \frac{1}{n}\right] + \left[x + \frac{1}{n}\right] \geq 0$$

$$\left[x - \frac{1}{n}\right] + \left[x + \frac{1}{n}\right] + 1 \geq 1$$

$$\left[x - \frac{1}{n} + 1\right] + \left[x + \frac{1}{n}\right] \geq 1$$

$$2\left[x + \frac{1}{n}\right] \geq 1$$

$$\left[x + \frac{1}{n}\right] \geq \frac{1}{2}$$

$$x + \frac{1}{n} \geq \frac{1}{2}$$

$$x \geq \frac{1}{2} - \frac{1}{n}$$

$$D_f = \left[\frac{1}{2} - \frac{1}{n}, +\infty\right)$$

ب)
$$y = \sqrt{\left[x - \frac{1}{n}\right] + \left[\frac{1}{n} - x\right]}$$

$$\left[x - \frac{1}{n}\right] + \left[\frac{1}{n} - x\right] \geq 0$$

$$[a] + [-a] = 0 \quad x \in \mathbb{Z}$$

$$[a] + [-a] \neq 0 \quad x \notin \mathbb{Z}$$

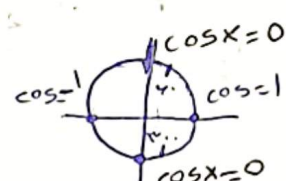
$$D_f = \mathbb{Z}$$

$$n - \frac{1}{n} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{n}$$

الف) $y = \frac{\cot x + 1}{\tan x + 1}$ $\cot x \neq -1$ $\tan x \neq -1$ $\sin x \neq 0$ $x \neq 0, \pi$
 $\cos x \neq 0$ $x \neq \frac{\pi}{2}, \frac{3\pi}{2}$
 $\tan x \neq -1$ $x \neq \frac{3\pi}{4}, \frac{7\pi}{4}$

ب) $y = \sqrt{1 - \sin^2 x}$ $|\sin x| \leq 1$ $\sin x \leq \frac{1}{\sqrt{2}}$ $\sin x \geq -\frac{1}{\sqrt{2}}$

 $[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$ و $[2k\pi - \frac{3\pi}{4}, 2k\pi - \frac{\pi}{4}]$
 ریشه‌های مثبت و منفی بازه قابل قبول

الف) $y = \sqrt{1 - \sin x} - 1$ $1 - \sin x \geq 0$ $\sin x \leq 1$
 $[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}]$
 ب) $y = \sqrt{1 - \cos x}$ $1 - \cos x \geq 0$ $\cos x \leq 1$
 $[2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}]$


الف) $y = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$
 $\frac{1}{4} \leq x^2 + 3x + \frac{9}{4} \leq \frac{9}{4}$
 $\frac{1}{4} \leq (x + \frac{3}{2})^2 \leq \frac{9}{4}$
 $\frac{1}{2} \leq x + \frac{3}{2} \leq \frac{3}{2}$ و $-\frac{3}{2} \leq x + \frac{3}{2} \leq -\frac{1}{2}$
 $-1 \leq x \leq 0$ و $-3 \leq x \leq -2$
 $[-3, -2] \cup [-1, 0]$
 ب) $\cos y = \sqrt{5 - 2x}$ $5 - 2x \geq 0$ $x \leq \frac{5}{2}$
 $-1 \leq \sqrt{5 - 2x} \leq 1$ $5 - 2x \leq 1$ $x \geq 2$
 $2 \leq x \leq \frac{5}{2}$

الف) $y = \log_2(1 - \log_3 x)$ $x > 0$ $1 - \log_3 x > 0$ $\log_3 x < 1$ $x < 3$
 ب) $y = \log_2(1 - \log_3 \frac{1}{x})$ $x > 0$ $\log_3 \frac{1}{x} < 1$ $x > \frac{1}{3}$ $[\frac{1}{3}, +\infty)$

الف) $y = \sqrt{x^2 - x^2 - a}$ $x^2 - x^2 \geq a$ $0 \geq a$ $a \leq 0$
 ب) $y = \frac{(x + 5)}{x + 2}$ $\frac{x + 5}{x + 2} \in \mathbb{W}$ $\frac{x + 5}{x + 2} = \frac{KW - 5}{KW - 2}$ $x \in \frac{KW - 5}{KW - 2}$
 $\frac{x + 5}{x + 2} = \frac{KW - 5}{KW - 2}$ $x(KW - 2) = (KW - 5)(x + 2)$ $xKW - 2x = KWx - 5x + 2KW - 10$ $-2x = -5x + 2KW - 10$ $3x = 2KW - 10$ $x = \frac{2KW - 10}{3}$
 $DF = [1, 3]$
 $DF = \{x | x = \frac{5 - KW}{KW - 2}, KW \in \mathbb{W}\}$

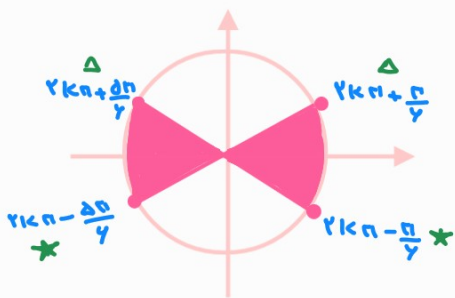
$$\text{الف - ٤)} \quad [-n] - r \geq 0 \rightarrow [-n] \geq r \rightarrow -n \geq r \rightarrow n \leq -r \rightarrow Df = (-\infty, -r]$$

$$\text{ب - ٥)} \quad \left[n - \frac{1}{r}\right] + \left[-n + \frac{1}{r}\right] \geq 0$$

مردانیم:

$$\begin{aligned} [n] + [-n] & \begin{cases} \rightarrow n \in \mathbb{Z} & 0 \checkmark \\ \hookrightarrow n \notin \mathbb{Z} & -1 \times \end{cases} \rightarrow \left[n - \frac{1}{r}\right] \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{r} \\ Df &= \left\{ n \mid n = k + \frac{1}{r}, k \in \mathbb{Z} \right\} \end{aligned}$$

$$\text{ب - ٩)} \quad 1 - r \sin^2 n \geq 0 \rightarrow r \sin^2 n \leq 1 \rightarrow \sin^2 n \leq \frac{1}{r} \rightarrow -\frac{1}{r} \leq \sin n \leq \frac{1}{r}$$



$$\rightarrow Df = \left[k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r} \right]$$

$$\text{ب - ٧)} \quad 1 - r \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{r}$$

$$\rightarrow Df = \left[rkn + \frac{\pi}{r}, rkn + \frac{\pi}{r} + \frac{\Delta}{r} \right]$$

$$\text{الف - ٨)} \quad -1 \leq n^r + \frac{r}{n} + 1 \leq 1 \xrightarrow{\frac{4}{r} - \frac{\Delta}{r}} -1 \leq n^r + \frac{r}{n} + \frac{4}{r} - \frac{\Delta}{r} \leq 1$$

$$\frac{1}{r} \leq n^r + \frac{r}{n} + \frac{4}{r} \leq \frac{4}{r} \rightarrow \frac{1}{r} \leq \left(n + \frac{r}{n}\right)^r \leq \frac{4}{r}$$

$$\int \left(n + \frac{r}{n}\right)^r \leq \frac{4}{r} \rightarrow -\frac{r}{r} \leq n + \frac{r}{r} \leq \frac{r}{r} \rightarrow -r \leq n \leq 0 \quad \text{I}$$

$$\int \left(n + \frac{r}{n}\right)^r \geq \frac{1}{r} \rightarrow n + \frac{r}{r} \geq \frac{1}{r} \rightarrow n \geq -1 \quad \text{II} \quad n + \frac{r}{r} \leq -\frac{1}{r} \rightarrow n \leq -r \quad \text{III}$$

$$\text{I} \cap \text{II} \rightarrow Df = [-r, -r] \cup [-1, 0]$$